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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,202

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Ho Yong Kang

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EXAMINER

VAN ROY, TOD THOMAS

ART UNIT

PAPER NUMBER

2828

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/810,202

Applicant(s)

KANG ET AL.

Examiner

Tod T. Van Roy

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/08/2006 have been fully considered but they are not persuasive.

The applicant has argued that it would be non-obvious to combine the top/bottom holders of Asano with the modulation circuit of Link, as Link teaches a desired reduction of circuit complexity.

The examiner does not disagree with the applicant in that Link teaches minimizing circuit complexity (col.2 line 37). The examiner does however feel that the addition of the top/bottom holders does not add any undue complexity to Links system, and would actually become an improvement to the system. Link teaches a main motivation for the circuit design is to control and improve upon the extinction ratio (col.1 lines 60-62, col.2 lines 1-10). The addition of the holders of Asano would add a means of obtaining the peak and bottom values of "1" and "0" transmissions. Knowing these values, Link would be able to appropriately make his adjustments to the extinction ratio (the ratio of the powers of "1" and "0" transmissions) to allow for clear data transmission.

The circuit of Asano is directed towards improvement of start-up characteristics of the transmitter, however this method works via feedback and adjustment of the optical output power at peak and bottom values. Link's system is directed towards a control of modulation and extinction ratio of a transmitter via feedback and adjustment of the optical output power. The addition of the peak/bottom holders of Asano to Link's system would present a simplified way of insuring obvious differences between peak

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and bottom values for clear eye diagrams (for data transmission), at the same time allowing for desired extinction ratio values.

As the circuits of Link and Asano are that of analogous art, and motivation exists for the combination of the Asano circuit elements with that of Link, the examiner is of the belief that one of ordinary skill in the art at the time of the invention would find the claim rejections both obvious and reasonable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Link (US 5850409) in view of Asano (US 2002/0009109).

With respect to claims 1 and 7, Link teaches an apparatus for compensating for characteristics of a laser diode so that the laser diode outputs an optical power at a constant level, also functioning as a transmitter with data inputs, the apparatus

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comprising: an optical output detector which detects an optical power output from the laser diode (fig.1 #MD, A1, RF) and converts the optical power into a voltage (col.3 lines 55-61), a bias current controller (fig.1 APC) which detects the voltage and outputs a first control value corresponding to a difference between the level and a first reference voltage (fig.1 #A2, ground ref), a modulation current controller (fig.1 AMC) which detects the voltage and outputs a second control value corresponding to a difference between the level and a second reference voltage (fig.1 #A3, AMCREF ref), and a laser diode driver that outputs a drive current to the laser diode according to the first and second control values (fig.1 comprised of #'s IBIAS and IMOD). Link does not teach the bias current controller to have a top holder, or the modulation current controller to have a bottom holder, or using the peak value to control the bias current or the bottom value to control the modulation current. Asano teaches a bias and modulation current controlling circuit wherein the bias and modulation controllers use top and bottom holders. Asano does not teach the "top" to be associated with the bias and the "bottom" with the modulation. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the controller of Link with the holders of Asano in order to insure sufficient power difference between "one" and "zero" levels to allow for clear data transmission. In addition it would have been obvious to interchange the top and bottom holders of Asano for incorporation into Link's circuit (giving the bias current controller the top holder and the modulation current controller the bottom holder) due to the inversion of the input to the APC and AMC of Link, wherein the same inverted signal

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input is not found in Asano (Asano has no inverted input to the APC/AMC, Link has an inverted input to the APC/AMC, therefor the holders must be interchanged).

With respect to claims 2 and 8, Link further teaches an optical/electrical signal converter which converts the optical power output from the laser diode into a current (fig.1 #MD); a trans-impedance amplifier which inverts an output of the optical/electric signal converter and a resistor which is in parallel connected to the trans-impedance amplifier and converts the current into a voltage (fig.1 #A1, Rf).

With respect to claims 3-6 and 9-12, Link and Asano teach the laser apparatus as outlined in the rejection to claims 1 and 7, and further teach the top holder (when added) would operate to detect the maximum level from voltage levels output from the optical output detector (inherent), and the APC operates to compare an output of the top holder (when added) with the first reference voltage (fig.1 A2, ground ref) and to output a control value corresponding to a difference between the output and the first reference voltage to the laser diode driver (function of amp, output to I_{bias}); and a bottom holder (when added) would operate to detect the minimum level from voltage levels output from the optical output detector (inherent), and the AMC operates to compare and output of the bottom holder (when added) with the second reference voltage (fig.1 A3, AMCREF) to output a difference between the output and the second reference voltage to the laser diode driver (function of amp, output to I_{mod}).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER